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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Baek-Woon Lee

AB-1532 US

1182

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06/15/2009

Haynes and Boone, LLP

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EXAMINER

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ART UNIT

PAPER NUMBER

2629

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/553,501	<b>Applicant(s)</b> LEE, BAEK-WOON	
	<b>Examiner</b> MY-CHAU T. TRAN	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 21-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 21-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Application and Claims Status***

1. Applicant's amendment and response filed 04/15/2009 are acknowledged and entered.
2. Claims 1-20 were pending. Applicants have amended claim 1; cancelled claims 2-20; and added claims 21-37. Therefore, claims 1 and 21-37 are currently pending and are under consideration in this Office Action.

***Priority***

3. Applicant is reminded that this instant application is a 371 of PCT/KR04/00882 filed on 04/16/2004, and as a result this instant application has the effective filing date of 04/16/2004.

***Information Disclosure Statement***

4. The information disclosure statement(s) (IDS) that were filed on 02/18/2009 and 04/10/2009 have been reviewed, and the references that have been considered are initialed as recorded in PTO-1449 forms.

***Status of Claim(s) Objection(s) and /or Rejection(s)***

5. All previous claims objection(s) and/or rejection(s) have been withdrawn in view applicant's amendments of claim 1 and cancellation of claims 2-20.

***New Rejection(s) – Necessitated by Amendment***

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1, 21, 22, 25-31, 33, and 37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s) at the time the application was filed had possession of the claimed invention. (This is a new matter rejection.)

a. Claim 1 recites the limitation of ‘*wherein the subpixels in each pixel represent three primary colors and a white color, respectively, and polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*’. Claim 22 recite the limitation of ‘*The liquid crystal display of claim 21, further comprising a data driver applying the data voltage via the data line and performing an  $N \times I$  dot inversion or a column inversion*’. That is the column inversion methodology would produce a result in which the “*polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*”. These limitations, which narrow the type of column inversion methodology, are not supported by the originally filed specification and/or claims; nor has applicant provided any indication where such support exists. See MPEP § 714.02, 5<sup>th</sup> paragraph, last sentence; MPEP § 2163.02; and MPEP § 2163.06. For example, the originally filed

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specification discloses that the drive methodology that result in the “*polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*” is a dot inversion methodology (see original specification: figs. 5, 10, 11, 12, and 16-19; sections: [28], [100], [114], [119], [122], [186], and [189]).

Therefore, the originally filed specification does not provide support for this limitation.

Furthermore, the original claims do not recite this limitation, i.e. ‘*polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*’ with regard to the column inversion methodology.

Consequently, this limitation has no specification or original claim support, and it is considered new matter.

**b.** Claim 1 recites the limitation of ‘*wherein the subpixels in each pixel represent three primary colors and a white color, respectively, and polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*’. Claim 33 recite the limitation of ‘*The liquid crystal display of any one of claims 31, further comprising a data driver applying the data voltages via the data lines and performing a column inversion*’. That is the column inversion methodology would produce a result in which the “*polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*”. These limitations, which narrow the type of column inversion methodology, are not supported by the originally filed specification and/or claims; nor has applicant provided any indication where such support exists. See MPEP § 714.02, 5<sup>th</sup> paragraph, last sentence; MPEP § 2163.02; and MPEP § 2163.06. For example, the originally filed specification

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discloses that the drive methodology that result in the “*polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*” is a dot inversion methodology (see original specification: figs. 5, 10, 11, 12, and 16-19; sections: [28], [100], [114], [119], [122], [186], and [189]). Therefore, the originally filed specification does not provide support for this limitation. Furthermore, the original claims do not recite this limitation, i.e. ‘*polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*’ with regard to the column inversion methodology. Consequently, this limitation has no specification or original claim support, and it is considered new matter.

c. Claim 1 recites the limitation of ‘*wherein the subpixels in each pixel represent three primary colors and a white color, respectively, and polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*’. Claim 37 recite the limitation of ‘*The liquid crystal display of any one of claims 31, further comprising a data driver applying the data voltages via the data lines and performing a column inversion*’. That is the column inversion methodology would produce a result in which the “*polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*”. These limitations, which narrow the type of column inversion methodology, are not supported by the originally filed specification and/or claims; nor has applicant provided any indication where such support exists. See MPEP § 714.02, 5<sup>th</sup> paragraph, last sentence; MPEP § 2163.02; and MPEP § 2163.06. For example, the originally filed specification discloses that the drive methodology that result in the “*polarities of voltages applied to*

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*same-colored subpixels of two immediately adjacent pixels in a row are different from each other*” is a dot inversion methodology (see original specification: figs. 5, 10, 11, 12, and 16-19; sections: [28], [100], [114], [119], [122], [186], and [189]). Therefore, the originally filed specification does not provide support for this limitation. Furthermore, the original claims do not recite this limitation, i.e. ‘*polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*’ with regard to the column inversion methodology. Consequently, this limitation has no specification or original claim support, and it is considered new matter.

If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the specification.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 28-31, 34, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The phrase “*an  $N \times I$  dot inversion or a column inversion*” of claim 22 is vague and indefinite because the variable ‘ $N$ ’ of the formula ‘ $N \times I$ ’ would encompass the definition that the variable ‘ $N$ ’ is equal to infinity, i.e. ‘ $N = \infty$ ’ or is indefinite. As a result, claim 22 is rejected under 35 U.S.C. 112, second paragraph.

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**B.** For claim 28, the terms “*first type pair*” and “*second type pair*” are vague and indefinite. The addition of the word ‘type’ to an otherwise definite expression (e.g. the term first and second) extends the scope of the expression so as to render it indefinite. See *Ex parte Copenhagen*, 109 USPQ 118 (Bd. App. 1955). See also MPEP § 2173.05(b)(E). Therefore, claims 28 and all dependent claims are rejected under 35 U.S.C. 112, second paragraph.

**C.** For claim 34, the terms “*first type pair*” and “*second type pair*” are vague and indefinite. The addition of the word ‘type’ to an otherwise definite expression (e.g. the term first and second) extends the scope of the expression so as to render it indefinite. See *Ex parte Copenhagen*, 109 USPQ 118 (Bd. App. 1955). See also MPEP § 2173.05(b)(E). Thus, claims 34 and all dependent claims are rejected under 35 U.S.C. 112, second paragraph.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1 and 21-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawabe (US Patent 7,113,159 B2; *Filing Date of 01/02/2003*).

For ***claims 1, 21-27, 32, 33, 36, and 37***, Sawabe discloses a liquid crystal display (LCD) device (see e.g. Abstract; col. 1, lines 5-6; col. 4, lines 24-31; figs. 1, 14, and 18). In general as shown by figures 1 and 2, the LCD device comprises a source drive circuit (ref. #5) (refers to



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instant claimed data driver) with a plurality of source bus lines (ref. #S1 thru s12) arranged vertically (refers to instant claimed plurality of data lines), a gate drive circuit (ref. #5) with a plurality of gate bus lines (ref. #S1 thru s12) arranged horizontally (refers to instant claimed plurality of gate lines), and at each intersection point between the source signal line and gate signal line there is a pixel electrode and a transistor for driving the pixel electrode (refers to instant claimed switching element) (see e.g. col. 7, line 29 thru col. 8, line 33). As illustrated by figures 2 and 3, each pixel is composed of three sub-pixels wherein each sub-pixel represents a primary color, i.e. red, green, and blue and a transistor that connect the sub-pixel to the source signal line and gate signal line (see e.g. col. 8, lines 20-33). In another embodiment as depicted by figures 12 and 13, each pixel is composed of four sub-pixels wherein each sub-pixel represents a primary color, i.e. red, green, and blue, and a white color (see e.g. col. 13, lines 37-64). Sawabe also disclose that the drive method for driving the LCD device is a method for inverting the polarity of applied voltage that includes a frame inversion drive system, a line inversion drive system, and a dot inversion drive system (refers to instant claims 22, 32, 33, 36, 37) (see e.g., col. 28, lines 12-45). As depicted by figure 2, Sawabe shows that the color sub-pixel in a row can be connected to the gate signal line (ref. #G1) (refers to instant claimed gate line) either from its upper side or its lower side and can be connected to the source signal line (ref. #S1 to S12) (refers to instant claimed data line) either from its left side or its right side (see fig. 2) to produce the sub-pixel arrangement as claimed in instant claims 21 and 23-27.

The teachings of Sawabe differ from the presently claimed invention as follows:

For **claim 1**, first, the claimed limitation of “*polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other*” is

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interpreted as a process limitation, i.e. a method of driving the instant claimed liquid crystal display wherein the methodology is a dot inversion methodology. This interpretation is fully supported by instant claim 22. Here, Sawabe fails to disclose a dot inversion methodology wherein the polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other.

*However*, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to disclose a dot inversion methodology wherein the polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other in the device of Sawabe. One of ordinary skill in the art would have been motivated to disclose a dot inversion methodology wherein the polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other in the device of Sawabe since it is art recognized that there are four inversion driving methods for an LCD device employing switching element such as a transistor. These methods, which invert the polarity of applied voltage, are frame inversion, line inversion, column inversion, and dot inversion as evident by Song et al. (US Patent 6,833,888 B2; see e.g. col. 2, lines 19-54; figs. 2 and 3). In the dot inversion method wherein the polarities of two adjacent pixels are opposite to each other, it is art recognized that there are several different drive schemes such as a 2-dot inversion method that produces different inversion polarities pattern as evident by Kim et al. (US Patent Application Publication US 2004/0239602 A1; see e.g. sections: [0016]-[0017]; figs. 2A, 2B, 3A, and 3B). As a result, the type of dot inversion methodology use in driving an LCD device employing switching element such as a transistor would be a design choice and is considered within the purview of the cited prior art. Furthermore, one of ordinary skill in the art

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would have a reasonable expectation of success in employing the dot inversion methodology wherein the polarities of voltages applied to same-colored subpixels of two immediately adjacent pixels in a row are different from each other in the device of Sawabe because Sawabe disclose that the drive method for driving the LCD device is a method for inverting the polarity of applied voltage that includes a frame inversion drive system, a line inversion drive system, and a dot inversion drive system (see e.g., col. 28, lines 12-45).

For **claims 28-31, 34 and 35**, Sawabe fails to disclose the sub-pixel arrangement/pattern as claimed in claims 28-31, 34, and 35.

*However*, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to disclose the sub-pixel arrangement/pattern as claimed in claims 28-31, 34, and 35 in the device of Sawabe. One of ordinary skill in the art would have been motivated to disclose the sub-pixel arrangement/pattern as claimed in claims 28-31, 34, and 35 in the device of Sawabe since Sawabe shows that the color sub-pixel can be connected to the gate signal line either from its upper side or its lower side and can be connected to the data line either from its left side or its right side (see fig. 2). Consequently, the type of sub-pixel arrangement/pattern use for an LCD device employing switching element such as a transistor would be a design choice and is considered within the purview of the cited prior art.

Therefore, the teachings of Sawabe do render the device of the instant claims *prima facie* obvious.

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***Response to Arguments***

12. Applicant's arguments with respect to claim 1 has been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MY-CHAU T. TRAN whose telephone number is (571)272-0810. The examiner can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MY-CHAU T. TRAN/  
Primary Examiner, Art Unit 2629

June 15, 2009